

AIG-302 系列

配備Arm® Cortex™-A7 雙核心1 GHz 處理器及Azure IoT Edge 軟體的進階 IIoT 閘道器，操作溫度範圍為-40 至70°C



特色與優點

- 支援通用 MQTT 用戶端，透過內建專為 Azure 雲端整合而設計的 SDK 來完成 MQTT 連線
- 支援 Modbus RTU/ASCII/TCP 用戶端
- 支援 Modbus TCP 伺服器
- 支援 Azure IoT Edge
- 內建網路流量監測與診斷工具，便於快速進行故障排除
- 提供強大的 OTA 功能，防止軟體升級過程中出現系統故障
- 配備安全啟動功能，防止惡意軟體注入攻擊
- -40°C 至 70°C 操作溫度範圍
- 提供支援美國、歐盟與亞太頻段的 LTE Cat.4 機型

認證



簡介

AIG-302 系列進階 IIoT 閘道器可將 Modbus RTU/ASCII/TCP 裝置連接至 Azure 雲端及 MQTT 等平台。這款閘道器支援 Modbus TCP 伺服器模式，可以將資料同時傳輸到雲端平台與本機 SCADA 系統。

使用 Azure IoT Edge 強化邊緣運算能力

AIG-302 支援 Azure IoT Edge，實現了諸多優勢，包括邊緣運算能力、更低的頻寬成本、更高的靈活性和可擴充性、與 Azure 服務無縫整合以及易於管理和更新。具體來說，AIG-302 可以在本機處理資料，不僅回應快、延遲低，還能有效地減少網路頻寬佔用，進而降低成本。此外，AIG-302 採用模組化設計並支援 Azure IoT Edge 還能提升系統的靈活性和可擴充性。同時，其與 Azure 雲端服務的無縫整合使您可以輕鬆地將雲端功能擴充到邊緣裝置。

內建即用型資料預處理功能，無需編碼

能源管理系統可收集平均發電量與能源效率等能源資料。這些資料隨後用於顯示現場狀況、觀察能源趨勢，並最佳化能源使用效率。多數能源管理系統需依賴有意義的資料，因此邊緣閘道器需在將現場收集的資料傳輸至雲端應用程式前，先進行預先處理。某些應用程式可能需要在短時間內對預先處理後的資料執行特定操作。AIG-302 即用型 IIoT 閘道器具備加值功能與直覺化 UI，僅需按幾下即可簡化資料預先處理與分散式裝置管理流程。

安全的遠端存取降低了維護成本

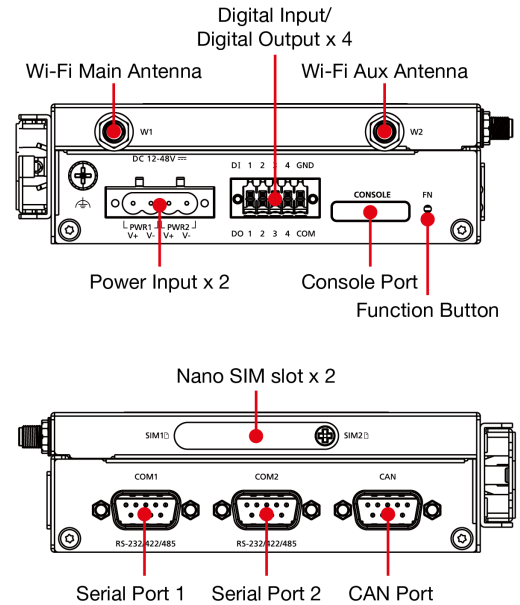
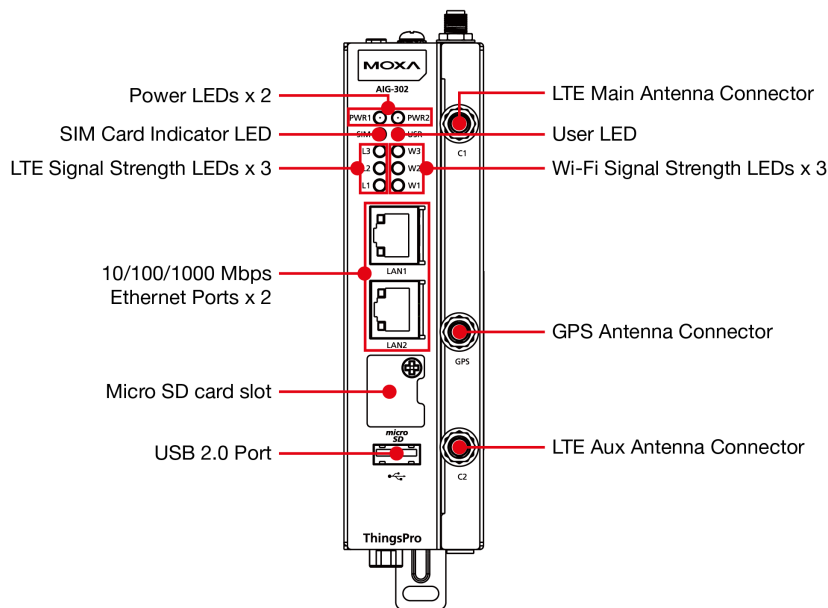
AIG-302 配備強大的故障排除工具，可診斷通訊協定狀態問題，並捕捉分析流量封包，協助工程師快速定位問題根源並使運作恢復正常。此外，AIG-302 提供安全的遠端存取功能，讓維護工程師能遠端解決問題，不僅節省時間與人力，更能減少能源管理系統的停機時間。外部連線可透過 OpenVPN 或 TLS 進行加密，確保通訊安全性。

針對安全問題偵測而最佳化的安全儀表板

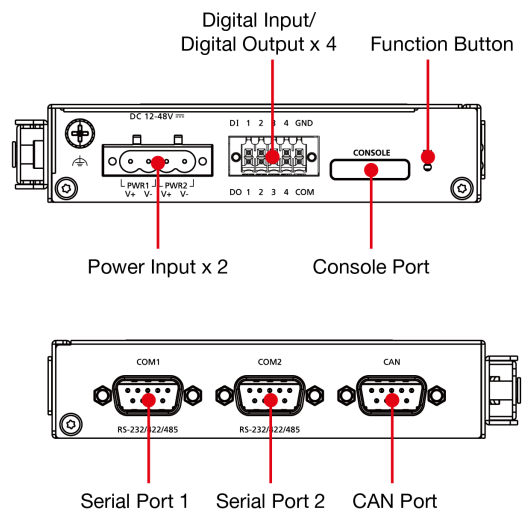
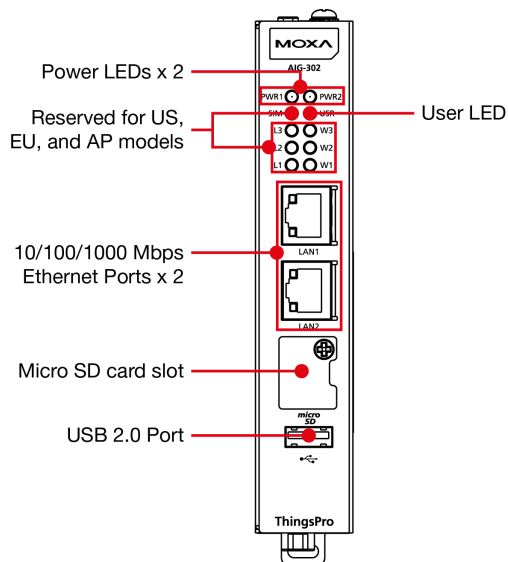
安全儀表板利用裝置掃描從多個角度識別潛在的網路安全威脅，例如在帳戶設定管理、應用程式連網、應用程式資源使用情況監測、產品憑證部署、服務設定修改以及系統狀態檢查期間。偵測到威脅後，會推薦相應的緩解計畫來解決問題。

外觀

AIG-302-T US、EU、AP 型號



AIG-302-T-AZU-LX



規格

Computer

CPU	Arm v7 Cortex-A7 dual-core 1 GHz
DRAM	2 GB DDR3L
Storage Pre-installed	32 GB eMMC
Pre-installed OS	Moxa Industrial Linux (Debian 11, kernel 5.10.x)
No. of Tags Supported	3000

Computer Interface

Ethernet Ports	Auto-sensing 10/100/1000 Mbps ports (RJ45 connector) x 2
Serial Ports	RS-232/422/485 ports x 2 (software-selectable, DB9 male connector)

CAN Ports	CAN 2.0 A/B x 1 (DB9 male)
Digital Input	DIs x 4
Digital Output	DOs x 4
USB 2.0	USB 2.0 hosts x 1, type-A connectors
Wi-Fi Antenna Connector	RP-SMA x 2 (excluding AIG-302-T-AZU-LX)
Cellular Antenna Connector	SMA x 2 (excluding AIG-302-T-AZU-LX)
GPS Antenna Connector	SMA x 1 (excluding AIG-302-T-AZU-LX)
Expansion Slots	mPCIe slots x 1 (excluding AIG-302-T-AZU-LX)
SIM Format	Nano (excluding AIG-302-T-AZU-LX)
Number of SIMs	2
Buttons	Reset button Reset to factory default
TPM	TPM v2.0

Ethernet Interface

Magnetic Isolation Protection	1.5 kV (built-in)
10/100/1000BaseT(X) Ports (RJ45 connector)	2

Ethernet Software Features

Industrial Protocols	Modbus TCP Client/Server Generic MQTT Azure IoT Device Azure IoT Edge
Configuration Options	Web Console (HTTP/HTTPS) AIG QuickON
Time Management	NTP Server/Client GPS
Security	OpenVPN Client, SSH HTTPS/SSL TLS Firewall

Serial Interface

No. of Ports	2
Connector	DB9 male
Baudrate	300 bps to 921.6 kbps
Data Bits	7, 8
Stop Bits	1, 2
Parity	None, Even, Odd, Space, Mark
Flow Control	RTS/CTS, XON/XOFF
Console Port	1 x 4-pin header

Serial Signals

RS-232	TxD, RxD, RTS, CTS, DTR, DSR, DCD, GND
RS-422	Tx+, Tx-, Rx+, Rx-, GND
RS-485-2w	Data+, Data-, GND

Serial Software Features

Industrial Protocols	Modbus RTU/ASCII Master
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CAN Interface

No. of Ports	1
Connector	DB9 male
Baudrate	10 to 1000 kbps
Industrial Protocols	CAN 2.0A CAN 2.0B
Signals	CAN_H, CAN_L, CAN_GND, CAN_SHLD, CAN_V+, GND
Isolation	2 kV (built-in)

Digital Inputs

Connector	Spring-type Euroblock terminal
Sensor Type	Wet contact (NPN) Dry contact
Dry Contact	Off: open On: short to GND
Wet Contact (DI to COM)	On: 10 to 30 VDC Off: 0 to 3 VDC
Isolation	3K VDC

Digital Outputs

Connector	Spring-type Euroblock terminal
Current Rating	200 mA per channel
I/O Type	Sink
Voltage	24 VDC nominal, open collector to 30 VDC

Cellular Interface

Cellular Standards	LTE Cat. 4
Band Options (US)	LTE Band 2 (1900 MHz) / LTE Band 4 (1700 MHz) / LTE Band 5 (850 MHz) / LTE Band 12 (700 MHz) / LTE Band 13 (700 MHz) / LTE Band 14 (700 MHz) / LTE Band 66 (1700 MHz) / LTE Band 71 (600 MHz) UMTS/HSPA 850 MHz / 1900 MHz Carrier Approval: Verizon, AT&T
Band Options (EU)	LTE Band 1 (2100 MHz) / LTE Band 3 (1800 MHz) / LTE Band 7 (2600 MHz) / LTE Band 8 (900 MHz) / LTE Band 20 (800 MHz) UMTS/HSPA 900 MHz / 1800 MHz / 2100 MHz
Band Option (APAC)	LTE Band 1 (2100 MHz) / LTE Band 3 (1800 MHz) / LTE Band 5 (850 MHz) / LTE Band 8 (900 MHz) / LTE Band 28 (700 MHz) UMTS/HSPA 850 MHz / 900 MHz / 2100 MHz

GPS Interface

Receiver Types	GPS/GLONASS/BeiDou/Galileo/QZSS
Accuracy	Position: 2.0 m @CEP50
Time to First Fix (TTFF)	Hot start: 1.1 s Warm start: 22.1 s Cold start: 29.9 s
Sensitivity	Cold starts: -145 dBm Acquisition: -147.0 dBm Tracking: -160 dBm
Update Rate	1 Hz

Azure IoT Edge

Versions Supported	v1.4.20
Authentication Methods	Manual / Connection String DPS / Symmetric Encryption DPS / X.509 Certificate DPS / TPM
Azure Direct Methods	Reboot Software Upgrade Remote API Invocation
Azure Module Twin	Device Configuration
Moxa Functions	Custom Payload Message Group

Generic MQTT Client

Versions Supported	v3.1.1 v3.1
QoS Levels	0, 1, 2
Authentication Methods	Username and password
Secure Transmission	TLS 1.0 TLS 1.1 TLS 1.2
Native Capabilities	Keep Alive Retain Message Clean Session Will and Testament
Moxa Functions	Store and Forward Custom Payload Remote API Invocation

Azure IoT Device

Connection Protocols Supported	MQTT MQTT over WebSockets AMQP AMQP over WebSockets
Authentication Methods	Symmetric Key X.509 Certificate
Azure Direct Methods	Reboot Software Upgrade Remote API Invocation

Modbus RTU/ASCII

Mode	Client
Functions Supported	1, 2, 3, 4, 5, 6, 15, 16, 23
Max. No. of Commands	256 per port
Max. No of Connected Devices	62

Modbus TCP

Mode	Client/Server
Functions Supported	1, 2, 3, 4, 5, 6, 15, 16, 23
Max. No. of Server Connections	64
Max. No. of Client Connections	4
Max. No. of Commands	3000

LED Indicators

System	Power x 2 User x 1 SIM card indicator x 1
LAN	2 per port (10/100/1000 Mbps)
Wireless Signal Strength	Cellular/Wi-Fi x 6

Power Parameters

No. of Power Inputs	Redundant dual inputs
Input Voltage	12 to 48 VDC
Input Current	1 A @ 12 VDC
Power Consumption	12 W
Power Connector	4-pin terminal block

Reliability

Automatic Reboot Trigger	External WDT (watchdog timer)
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Physical Characteristics

Housing	Metal SECC
IP Rating	IP30
Weight	AIG-302-T-AZU-LX: 560 g (1.23 lb) All other models: 750 g (1.65 lb)
Dimensions	AIG-302-T-AZU-LX: 141.5 x 120 x 27 mm (5.7 x 4.72 x 1.06 in) All other models: 141.5 x 120 x 39 mm (5.7 x 4.72 x 1.54 in)
Installation	DIN-rail mounting Wall mounting (with optional kit)

Environmental Limits

Operating Temperature	AIG-302-T-AZU-LX: -40 to 85°C (-40 to 185°F) All other models: -40 to 70°C (-40 to 158°F)
Storage Temperature (package included)	-40 to 85°C (-40 to 185°F)

Ambient Relative Humidity	5 to 95% (non-condensing)
Shock	IEC 60068-2-27
Vibration	2 Grms @ IEC 60068-2-64, random wave, 5 to 500 Hz, 1 hr per axis (without USB devices attached)

Standards and Certifications

EMC	EN 55032/35 EN 61000-6-2/-6-4
EMI	CISPR 32, FCC Part 15B Class A
EMS	IEC 61000-4-2 ESD: Contact: 4 kV; Air: 8 kV IEC 61000-4-3 RS: 80 MHz to 1 GHz: 10 V/m IEC 61000-4-4 EFT: Power: 2 kV; Signal: 1 kV IEC 61000-4-5 Surge: Power: 1 kV; Signal: 1 kV IEC 61000-4-6 CS: 10 V IEC 61000-4-8 PFMF
Safety	UL 62368-1 EN 62368-1
Radio	NCC KC RCM TELEC
Carrier Approvals	AT&T Verizon PTCRB
RED	EN 301 489-1/19/52 EN 301 908-1 EN 303 413 EN 62311
Hazardous Locations	Class I Division 2, ATEX
Green Product	RoHS, CRoHS, WEEE

MTBF

Time	AIG-302-T-AZU-LX: 1,772,745 All other models: 1,403,998
Standards	Telcordia (Bellcore) Standard TR/SR

Warranty

Warranty Period	5 years
Details	See www.moxa.com/tw/warranty

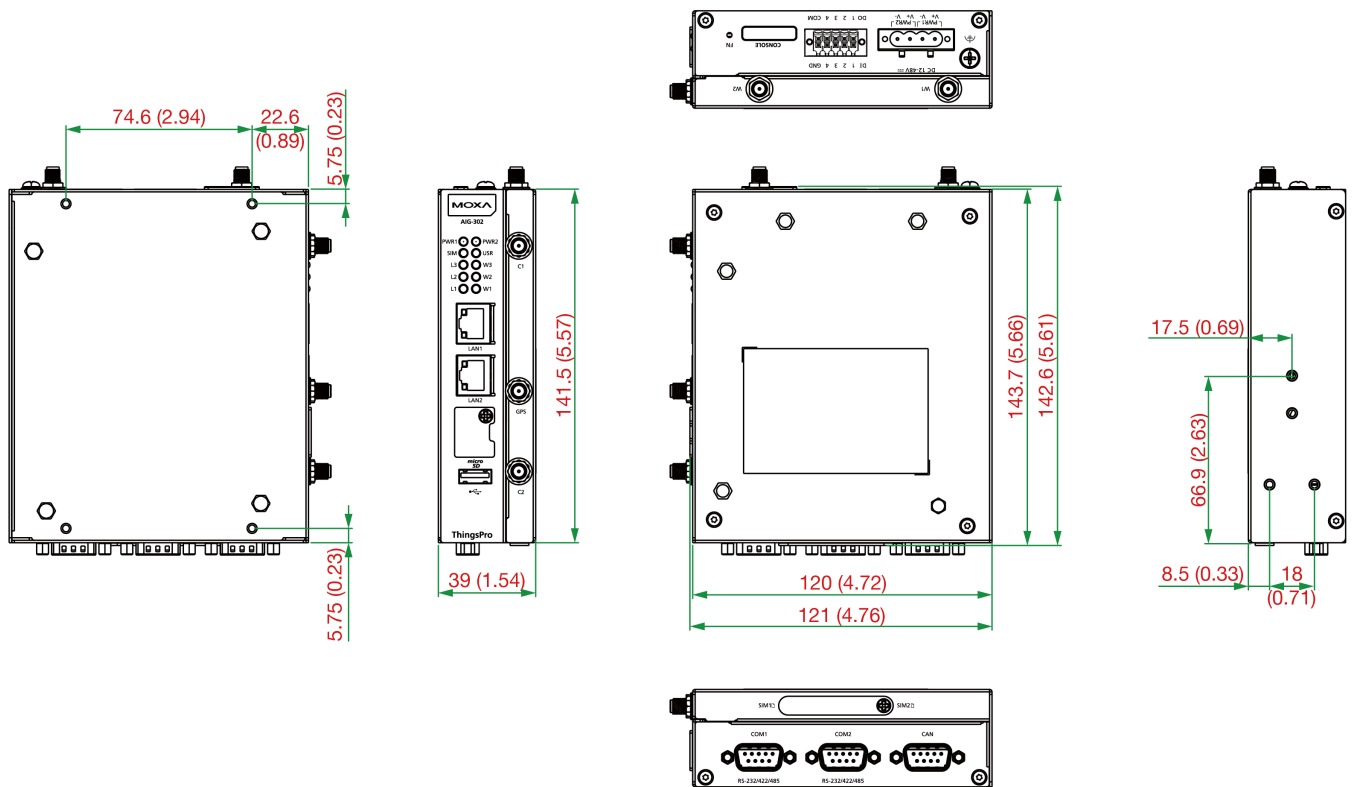
Package Contents

Device	1 x AIG-302 Series advanced IIoT gateway
Cable	1 x terminal block to power jack converter
Installation Kit	1 x DIN-rail kit
Documentation	1 x quick installation guide 1 x warranty card

尺寸

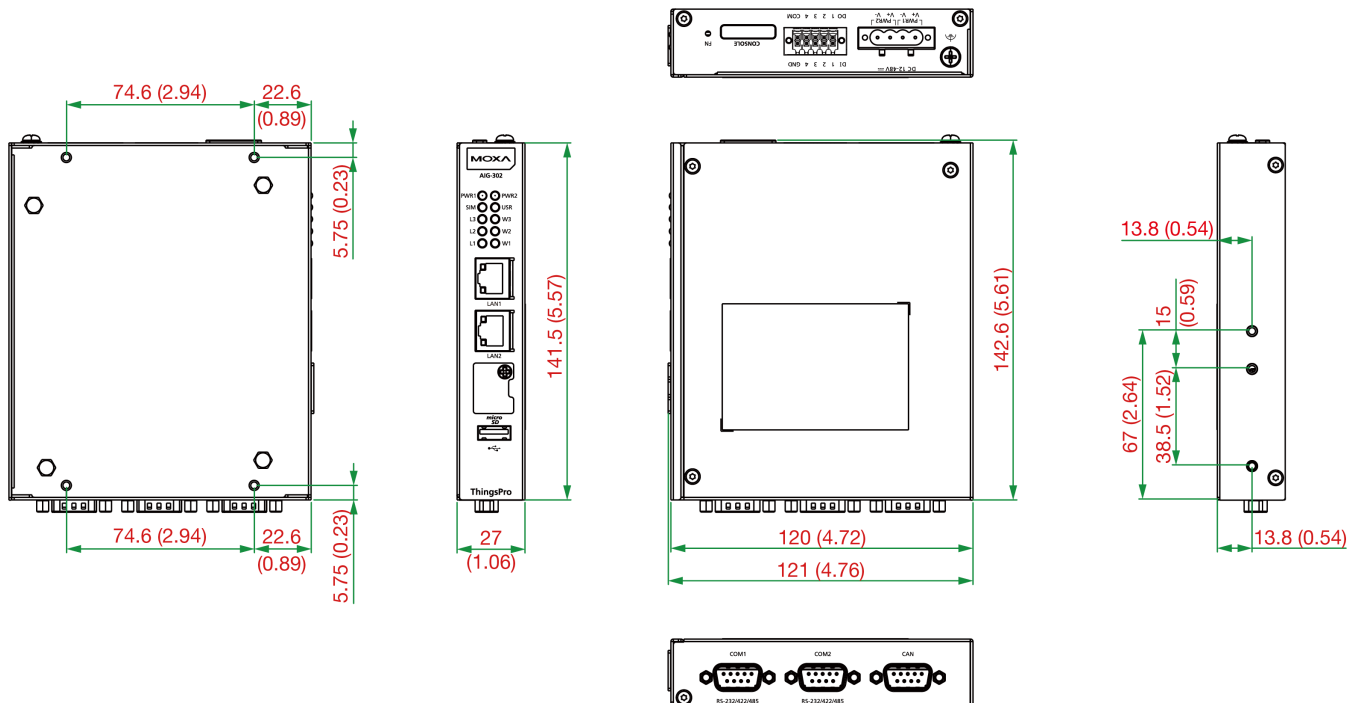
AIG-302 US、EU 與 AP 型號

單位：公釐（英吋）



AIG-302-T-AZU-LX

單位：公釐（英吋）



訂購資訊

Model Name	mPCIe Slot 1 for LTE Module	mPCIe Slot 2 for Wi-Fi Module	Operating Temperature
AIG-302-T-AZU-LX	–	–	-40 to 85°C
AIG-302-T-US-AZU-LX	US region LTE module preinstalled	Reserved	-40 to 70°C
AIG-302-T-EU-AZU-LX	Europe region LTE module preinstalled	Reserved	-40 to 70°C
AIG-302-T-AP-AZU-LX	APAC region LTE module preinstalled	Reserved	-40 to 70°C

配件 (選購)

Power Wiring

CBL-PJTB-10	Non-locking barrel plug to bare-wire cable
Mini DB9F-to-TB	DB9 female to terminal block connector

Cables

CBL-F9DPF1x4-BK-100	Console cable with 4-pin connector, 1 m
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Wi-Fi Wireless Modules

UC-8200-WLAN22-AC	Wireless package for UC-8200 V2.0 or later with Wi-Fi module, 2 screws, 2 spacers, 1 heat sink, 1 pad
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Antennas

ANT-LTEUS-ASM-01	GSM/GPRS/EDGE/UMTS/HSPA/LTE, 1 dBi, omnidirectional rubber-duck antenna
ANT-LTE-ASM-04 BK	704 to 960/1710 to 2620 MHz, LTE omnidirectional stick antenna, 4.5 dBi
ANT-LTE-OSM-03-3m BK	700-2700 MHz, multiband antenna, specifically designed for 2G, 3G, and 4G applications, 3 m cable
ANT-LTE-ASM-05 BK	704-960/1710-2620 MHz, LTE stick antenna, 5 dBi
ANT-LTE-OSM-06-3m BK MIMO	Multiband antenna with screw-fastened mounting option for 700-2700/2400-2500/5150-5850 MHz frequencies
ANT-WDB-ARM-0202	2 dBi at 2.4 GHz or 2 dBi at 5 GHz, RP-SMA (male), dual-band, omnidirectional antenna

Wall-Mounting Kits

UC-8200 Wall-mounting Kit	Wall-mounting kit for UC-8200 with 4 M3 screws
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